

Microbe Sensor BM-300C

User's Manual



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Dear Sharp Customer

Thank you for choosing Sharp Microbe Sensor. (Model Name: BM-300C, the “Product”).

Please read this manual thoroughly before the use for your safety and proper use of the Product, especially Important Safety Precautions, and keep this manual near the device so that you can refer to it whenever required.

Notice

The Product is designed and manufactured for general applications in ordinary industries use. Therefore, it must not be used in specific applications that can affect the health or safety of the public. Such applications require a special warranty of quality that SHARP explicitly does NOT offer for our Product.

Information in this manual is subject to change without notice and does not represent a commitment on the part of Sharp Manufacturing Systems Corporation (“SHARP”) and its sales distributors.

SHARP and its sales distributors shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

SHARP strongly recommends you to store important data on a separate memory device.

Data may be lost or altered in virtually any electronic memory product under certain circumstances like by electrostatic discharge and electromagnetic field. Therefore, SHARP assumes no responsibility for data lost or otherwise rendered unusable whether as a result of improper use, repairs, defects or any other causes.

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You are not allowed to copy or reprint a part or whole of this manual without written approval by SHARP.

The Product including its accessory may be changed without notice for improvement.

Important Safety Precautions

- This instruction manual and the Product itself adopt symbols for precautions for safety. The results caused by incorrect use and non conformity to the symbols are classified as follows:

Please fully understand each precaution for safety and observe them.

 Danger	Indicates potentially very hazardous situation which, if not avoided, is likely to result in death or serious injury.
 Warning	Indicates potentially hazardous situation which, if not avoided, is likely to result in death or serious injury.
 Caution	Indicates potentially very hazardous situation which, if not avoided, is likely to result in minor or moderate injury or property damage.

- Meaning of each symbol



Indicates Pay Attention (Danger, Warning and Caution)



Indicates Do Not



Indicates Must Do

This Product is a Class 1 Laser Product. (IEC 60825-1:2007)

A Class 1 laser is safe under all conditions of normal use.

(Wavelength: 405nm, Maximum Power: 60mW)

Be sure to operate the product according to the User's Manual and Instruction Manual.

Never operate the Product in the manner not described in the manuals.

Failure to follow this may result in injury or damage to the Product.



Danger To avoid electric shock hazard, fire, etc.



Do Not

- Do not pour, put or insert metals such as a pin and wire, foreign materials and liquid into or on the vent holes, holes and terminals of the Product.



Do Not
Disassemble

- Do not disassemble, repair or alter the Product by not qualified personnel. Failure to follow these may result in electric shock, injury or damage to the Product.



Warning To avoid electric shock hazard, fire, etc.



Must Do

- The Product must be grounded.
The end of the power cord of this Product has a 3 prong plug with grounding pin.
Be sure to connect it to a 3 pin outlet with grounding connection.
Failure to follow this may result in electric shock and fire.



Must Do

- Be sure to use the exclusive battery charger for BM-300C.
Failure to follow this may result in fire or damage to the Product.



Must Do

- Be sure to plug the power cord of the Product into **100 to 240VAC**, power outlet.
Connecting to other voltage power outlet will result in fire and damage to the Product.



Do Not

- Do not open the battery compartment while the Product is powered.
Failure to follow this may result in electric shock.



Must Do

- Be careful not to pinch your fingers when opening or closing the battery compartment.
Failure to follow this may result in injury.



Do Not

- Do not use or store the Product in outdoor or in a place where the environment temperature exceeds 60°C or under direct sun light.
Failure to follow this may result in fire or damage to the Product.



Must Do

- Should the Product become hot, smoke, smell unusually, etc. turn off the power of the Product and unplug the power cord immediately and contact our dealer for repair.
Failure to follow these may result in fire and electric shock.



Do Not

- Do not damage, disassemble or alter the Product.
Failure to follow this may result in fire and electric shock.



Caution To avoid electric shock hazard, fire, etc.



Do Not

- Do not use the Product in dusty or humid place or where the Product is exposed to oil mist, steam, etc.

Failure to follow this may result in fire and electric shock.



Do Not

- Do not use the Product on not flat or unstable surface.

Failure to follow this may result in injury.



Do Not

- Do not plug or unplug the power plug with wet hands or put container with fluid filled around the Product.

Failure to follow this may result in electric shock.



Do Not

- Do not hit, drop or give mechanical vibration and shock to the Product.

Failure to follow these may result in fire, electric shock or damage to the Product.



Must Do

- Be sure to hold the handle of the Product when carryin it.

Failure to follow this may result in injury.



Must Do

- Turn off the Power Switch and disconnect the power cord from the power outlet when not using the Product for long time.



Do Not

- Do not use the Product for the purpose or in the manner other than those specified in this manual.

AC Adapter and Power Cord



Warning To avoid electric shock hazard, fire, etc.



Must Do

- Be sure to plug the power cord into **100 to 240VAC, 15A**, power outlet.

- Be sure to ground the power cord.

Failure to follow these may result in fire and electric shock.



Must Do

- Plug the power cord directly to the power outlet.

Putting too many plugs in one outlet may result in fire.



Do Not

- Do not plug or unplug the power plug with wet hands.

Failure to follow this may result in electric shock.



Warning To avoid electric shock hazard, fire, etc.



Do Not

- Do not damage, disassemble or alter the AC adapter and power cord.

Do not put heavy material on, pinch or bend forcibly the power cord.

Failure to follow these may result in fire and electric shock.



Do Not

- Do not use the AC adapter in outdoor or in a place where the environment temperature exceeds 60°C or under direct sun light.

Failure to follow this may result in fire or damage to the Product.



Caution To avoid electric shock hazard, fire, etc.



Must Do

- Plug or unplug the power cord by holding the plug body.

- Plug the power plug securely into the power outlet.

Failure to follow these may result in fire and electric shock.



Do Not

- Do not plug the power plug into loose power outlet.

Failure to follow this may result in fire and electric shock.



Must Do

- Clean the power plug with dry cloth if it is dusty or contaminated.

Failure to follow this may result in fire and electric shock.



Must Do

- Disconnect the power plug from the power outlet when not using the Product for long time.

Optional Battery



Caution To avoid electric shock hazard, fire, etc.

- Do not open or dismantle battery.
- Do not expose the battery to heat or fire. Avoid storage in direct sunlight.
- Do not short circuit the battery.
- Do not store the batteries haphazardly in a box or drawer where they may short circuit each other or be short circuited by other metal objects.
- Do not remove the battery from its original packaging unit required for use.
- Do not subject the battery to mechanical shock.
- In the event of a battery leaking, do not allow the liquid to come in contact with skin or eyes.
If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- Be sure to charge the battery only with its exclusive Battery Charger (RRC-SMB-UBC).
Do not use any charger other than this.
- Observe the plus (+) and minus (-) marks on the battery and the device and ensure correct use.
- Keep the battery out of the reach of children.
- Keep the battery clean and dry.
- The battery needs to be charged before use.
- When possible, remove the battery from the device when not in use.
- Do not store the battery longer than 1 month in discharged state.
- Do not storage battery longer than 1 year without recharge.
- The battery must be recycled or disposed of properly.

Recommendation:

Store the battery at below 20°C, low humidity, no dust and no corrosive gas atmosphere.

Store the battery with a state of charge between 50 – 80%.



Before Operating BM-300C

1.1 General

The Microbe sensor, BM-300C, is a device designed to detect microbial biomass that includes such as fungi, bacteria, nonculturable living microbe and killed microbe in about 10 minutes and intended for indoor use.

It employs Sharp's proprietary technology that utilizes increase in self fluorescence of microbes under heating.

1.2 Accessories

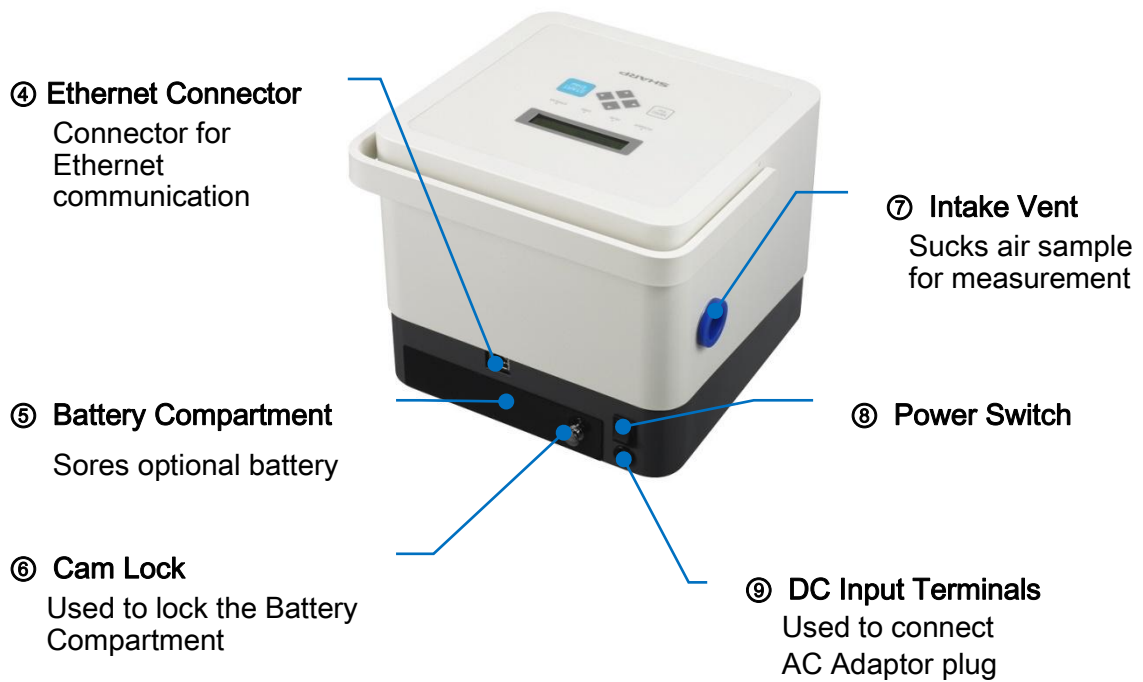
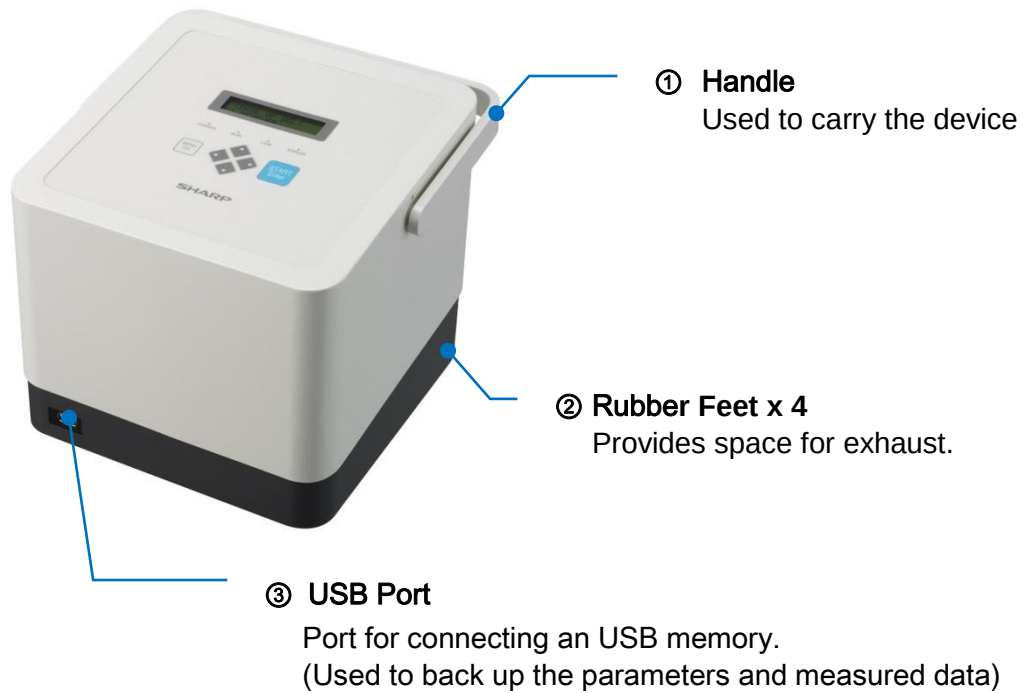
Please check that the following are included right after unpacking the Product

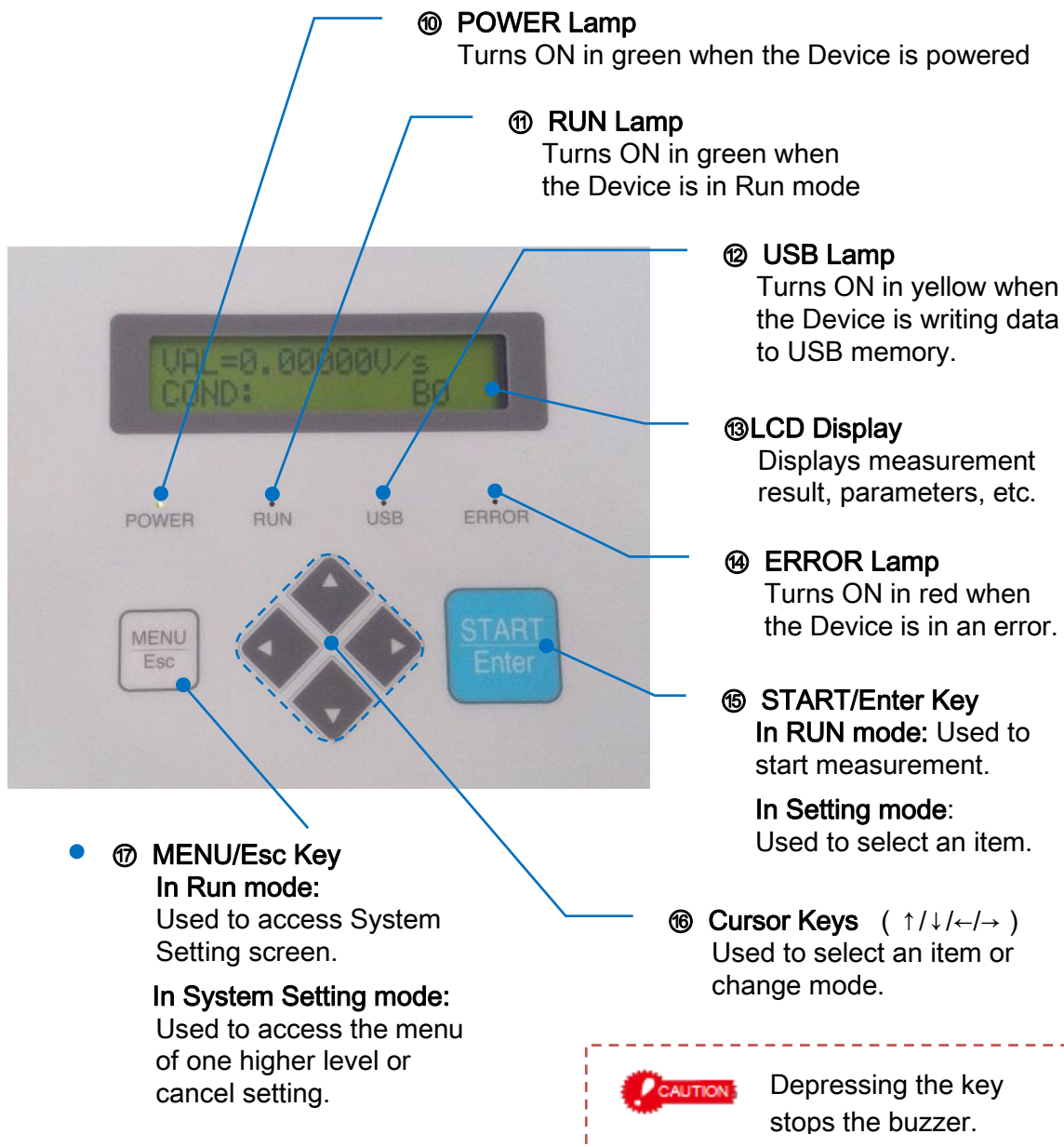
- AC Adapter x 1
- AC Power Cord x 1
- User's Manual (English) x 1

1.3 Options (Sold separately)

- Battery, Model Name: RRC2024
- Battery Charger, Model Name: RRC-SMB-UBC

1.4 Name and Function of each Component





The ⑮ START/Enter key and ⑰ Menu/Esc key are sometimes referred to as “Enter” and [Esc] key, respectively, in this manual.

1.5 Important Handling Information

1.5.1 Installation (Operating and Storage Environment)

Please be sure to store, install and use the device at a location not exposed to the following:

- Direct sunlight and heat (like near a heating appliance)
- Near the devices that generate magnetic field or has been magnetized
- High humidity causing condensing
- Dusty environment
- Mechanical vibration and impact
- Unstable table top

Not observing the above may result in discoloration, deformation or damage to the device.

Please do not use the device under the following gas environment

- Causes explosion, fire, etc. and hazardous to human...
- Causes deterioration or corrosion of the device
- Contains mist, liquid droplets, oil droplets or too much powder particles.

Not observing the above may result in an accident or damage to or failure of the device as well as inaccurate measurement.

When using the device that has been used in a low cleanliness degree area in a high cleanliness area, the measurement may not be done correctly.

In such a case, maintenance of the device is required.

Please consult your dealer.

1.5.2 Devices compatible with USB port of this Device

Only a FAT 32 Formatted USB memory can be connected.

The port cannot be used for any other purposes, like serial communication, etc.

1.6 Cleaning

Be sure to unplug the power cord before cleaning the device.

- External of the Device
Wipe off with soft, lint free cloth that is once dampened with water and then squeezed tightly for drying.
- Intake Vent and Exhaust Vent
Brush off dirt around the intake vent and exhaust vent with a soft brush.

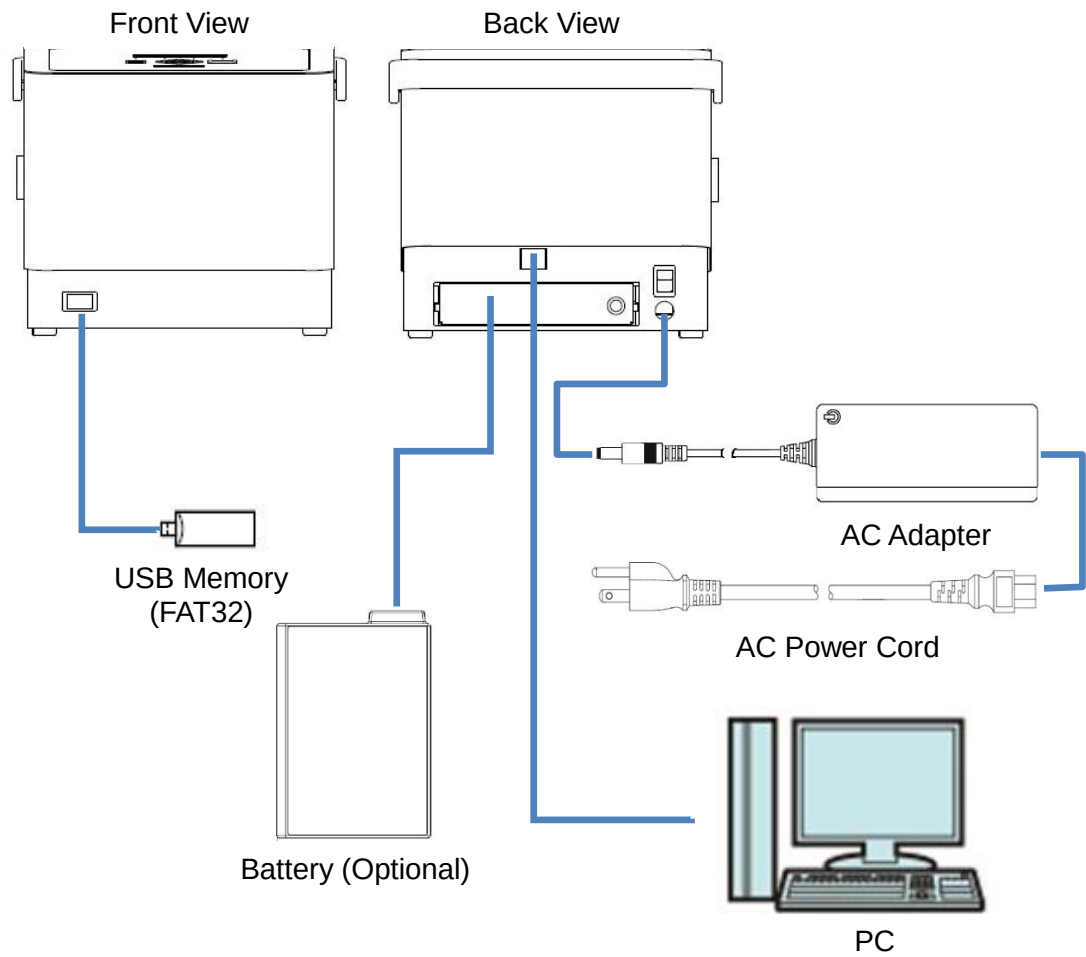
1.7 Consumables

Sample Collection Plate and Battery (Optional) are the consumables of this Device.

- **Collection Plate**
The Collection Plate should be replaced at around every 5,000 times of sample collection.
Contact our dealer to replace these consumables.
- **Battery (Optional)**
The fully charged battery voltage goes down to 75% of the initial after 300 charging cycles.

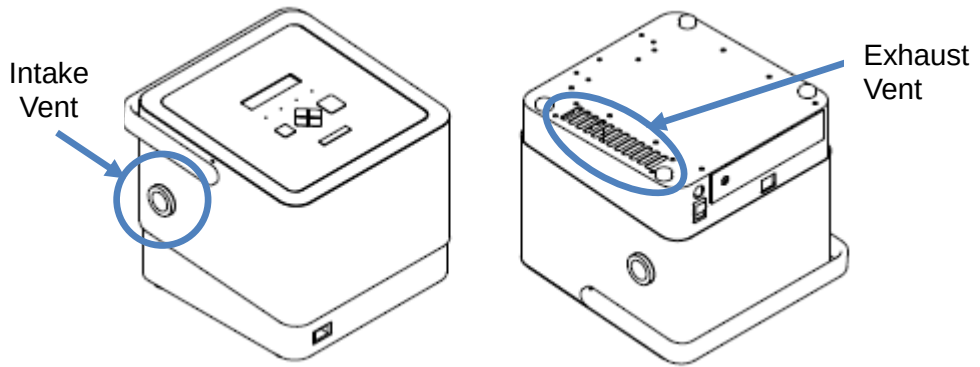
1.8 Preparation

1.8.1 System Structure

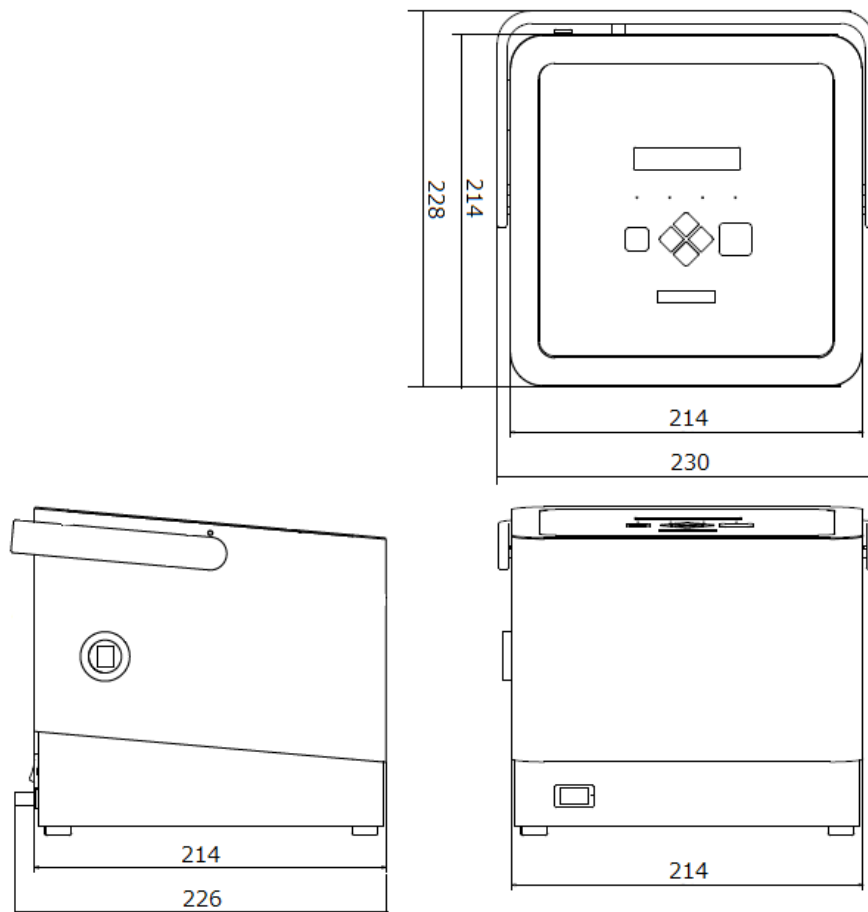


1.8.2 Installation

- Install the Device on a level, rigid and stable surface.
- Place the Device such that Intake Vent faces the area to be measured.
- Do not block the Intake Vent and Exhaust Vent at the bottom of the Device.



• External Dimensions (mm)



1.8.3 Power Supply and Grounding Connection

The Device comes with a 3 pin Power Plug with grounding connection.

Be sure to connect the Plug to 3 pin power outlet (100 – 240VAC) with grounding terminal.

If the 3 pin power outlet is not available, use a 3 pin to 2 pin conversion plug and connect the grounding wire to a grounding terminal.

1.8.4 Battery (Optional)

NOTE:

The battery (RRC2024) is set to a sleep (no output voltage) mode at the time of factory release.

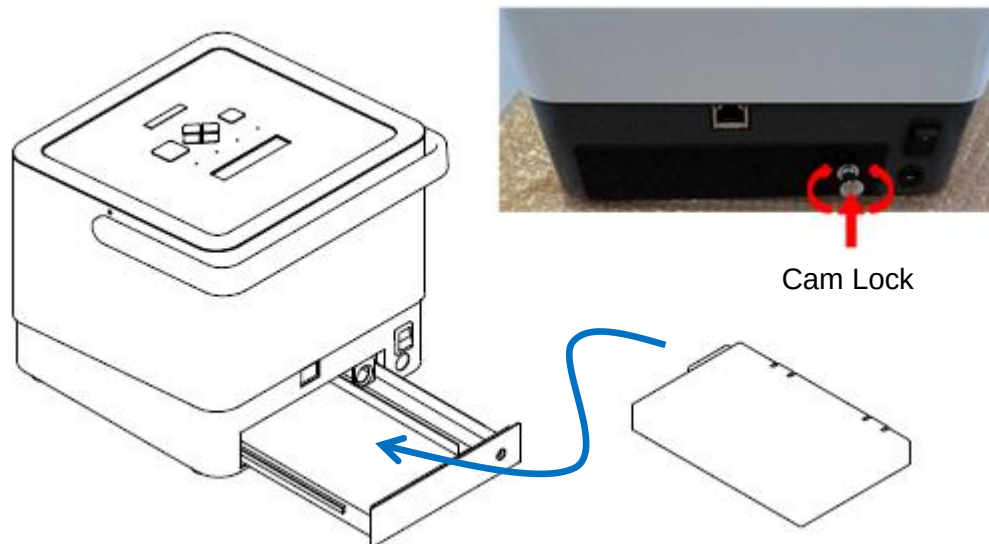
Please be sure to charge the battery only with its exclusive Battery Charger (RRC-SMB-UBC) before the first use.

The sleep mode is released automatically upon the initial charging.

Please refer to the instruction manuals come with each component for the details.

Install a fully charged battery according to the following steps:

- Push the Cam Lock, turn and pull it to take out the Battery Compartment from the device.
- Install the battery into the compartment with its Front Side up.
Note: Do not insert the battery upside down.
- Slowly push in the Battery Compartment into the device and push the Cam Lock to lock the compartment.



When the battery voltage goes down to 10% or less (BO), the measurement result is stored in internal memory and not in USB memory. Be sure to check battery is fully charged before storing data.



When the battery voltage goes down to 30% or less (BO), a buzzer will sound. Please fully charge the battery.

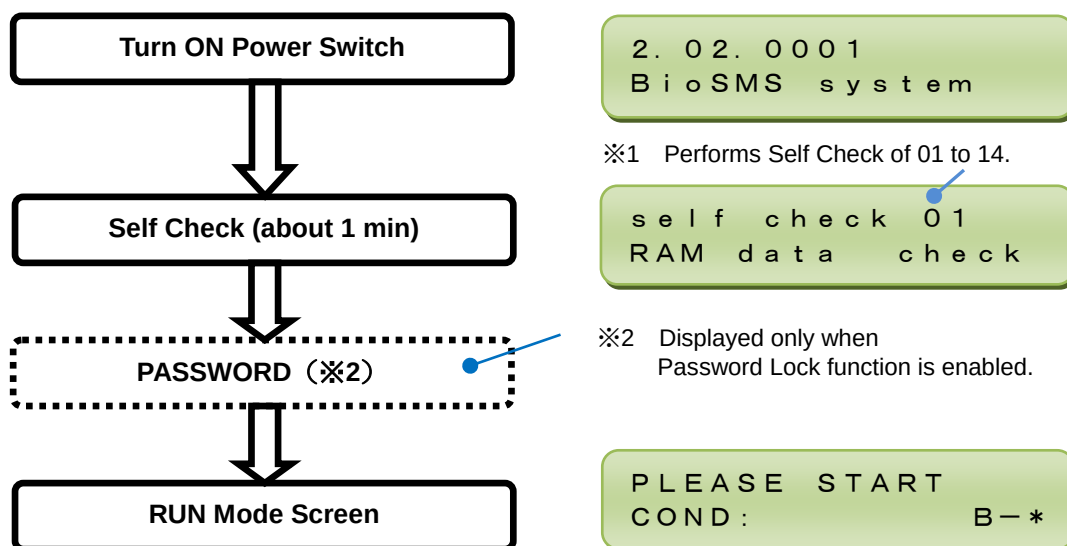


How to Use

2.1 Turn ON of the Device

Press the Power Switch on the back of the Device.

Start Up screen will be displayed on the LCD display, Self Check function is performed for about 1 minute, PASSWORD screen will be displayed (※1) and then Run Mode screen will be displayed. Press the [START/Enter] key on the bottom right of the LCD Display to start measurement.



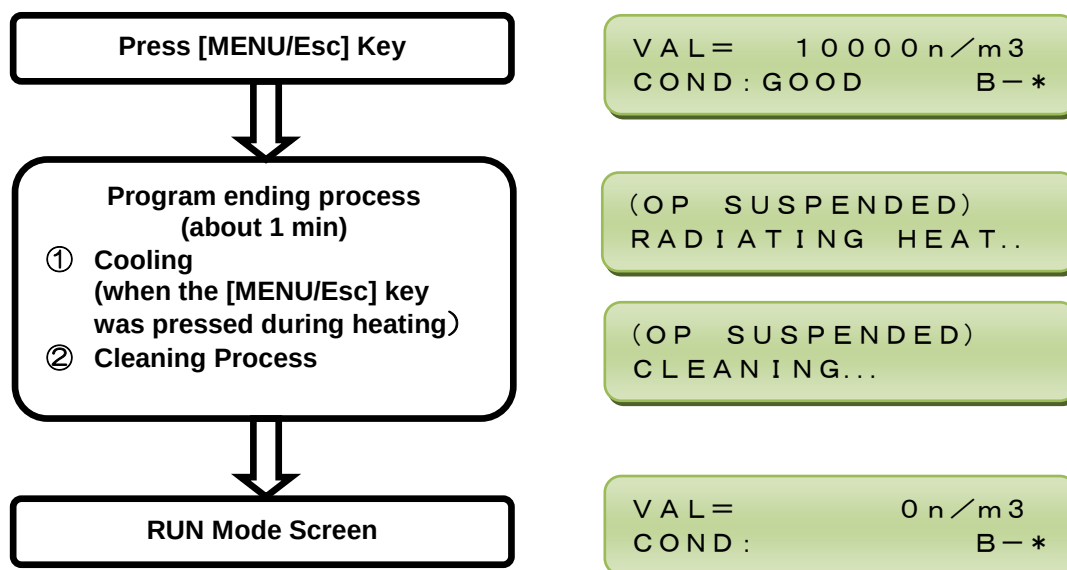
2.2 Turn OFF of the Device



Turning off the Device with Power Switch while it is in RUN mode may make the next measurement inaccurate.

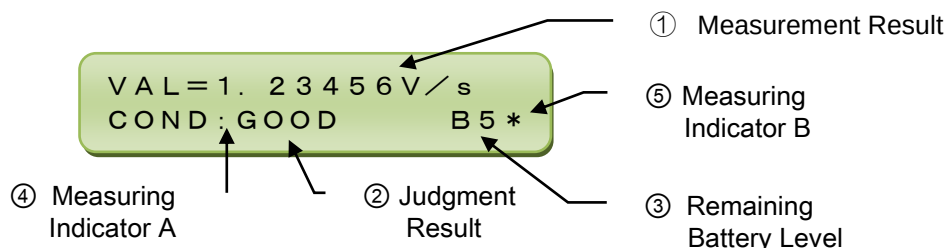
Following is the steps to turn off the device while it is in RUN Mode:

1. Press [MENU/Esc] key on the bottom left of the LCD Display.
2. Check that the LCD Display indicates "Please wait...".
3. Check that the RUN lamp is OFF.
4. Then, press the Power Switch to turn OFF the Device.



2.3 RUN Mode Screen

RUN Mode Screen displays the measurement result, measurement conditions, etc.
The start and stop of the measurement is done on this screen.



① Measurement Result:

Displays fluorescent amount of airborne microbe.

② Judgment Result:

Displays the result ("GOOD", "NO GOOD" or "N.D.") based on the preset alarm threshold.

N.D. denotes Not Detected.



"N.D." denotes that the microbial biomass is too low to be detected and the measured environment is highly clean and not an error of the device. If you want to get a numeric result rather than "N.D.", increase the air sucking volume (See section 2.7.1).
There is a case a numeric value can be obtained.

③ Remaining Battery Level:

Displays the Level in 10 steps (10 %/step).

B9: (100 %- 90 %) to B0: (9%- 0%)

B -: (Optional Battery is not installed)

④ Measuring Indicator A:

The ":" blinks during the measurement.

⑤ Measuring Indicator B:

Indicates "*" → "+" → "x" in the order during measurement.

Indicates "*" when the measurement is stopped.

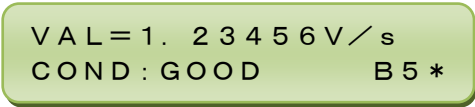
2.3.1 Start Measurement

The measurement will be done under the preset conditions like suction time and repeat cycle.

1. Press the [START/Enter] key on the bottom right of the LCD Display to start measurement.

RUN Lamp turns ON when the [START/Enter] key is pressed.

When the [MENU/Esc] key is pressed during the measurement, the measurement is stopped and the RUN lamp goes OFF.



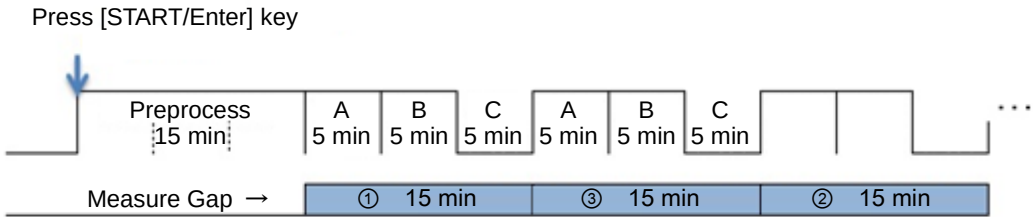
When the [MENU/Esc] key is pressed during the measurement is stopped, the screen will switch to Select screen.



Example:

Measure Mode: AUTO, Suction Time: 5 min, Measure Gap (interval): 15 min

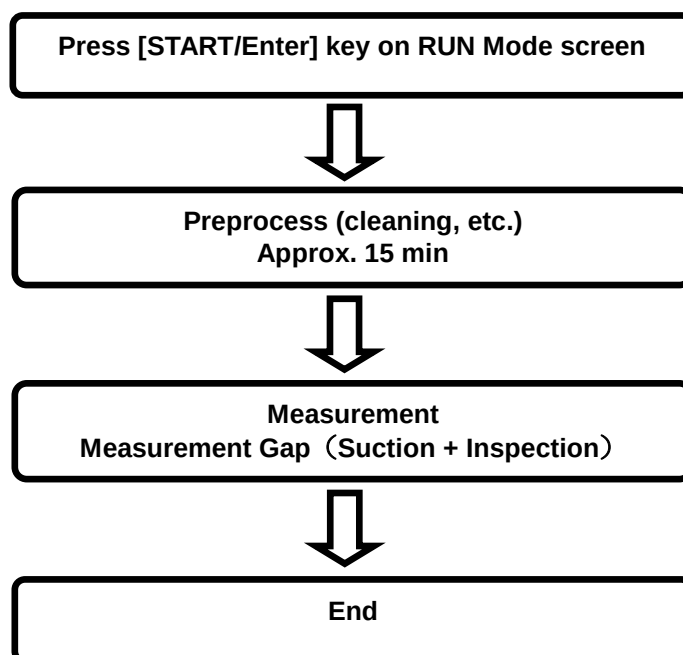
Note: Once the Measure Mode is set to AUTO, the measurement is repeated until it is stopped by the [MENU/Esc] key pressing.



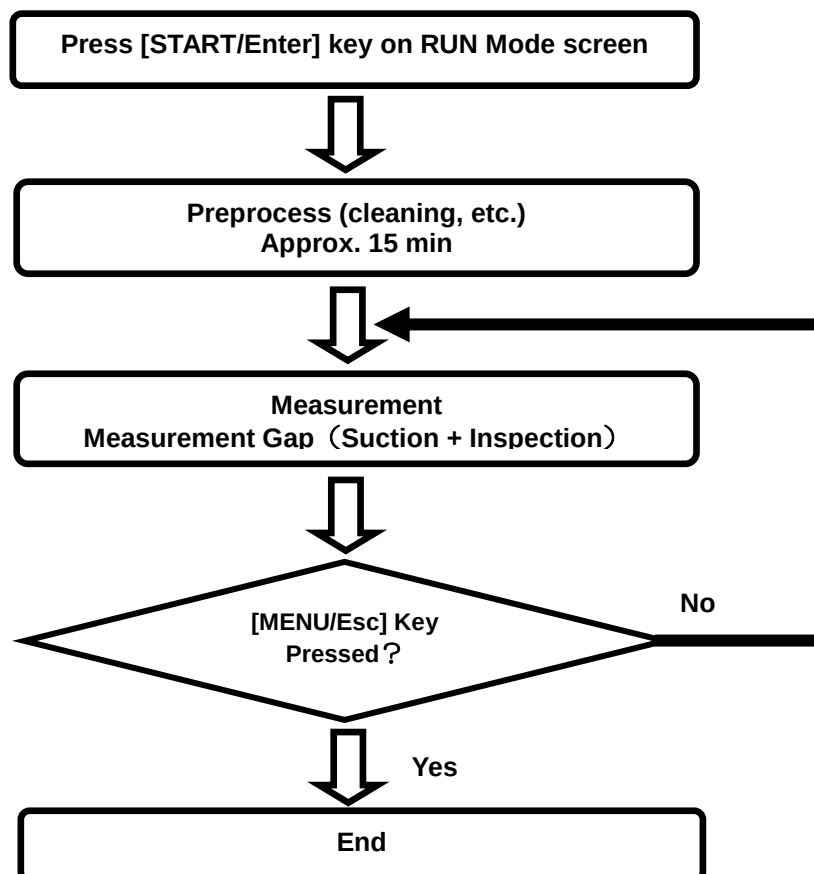
A: Suction Time, B: Inspection Time, C: Waiting Time

(Reference) Operation Flow

- Single Measurement: Measure Mode = Manual



- Continuous Measurement: Measure Mode = AUTO-xxxx



※ See section 2.6.1. for Measure Mode.

2.3.2 Change Display Mode of Run Mode Screen

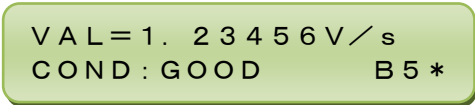
1. The Display Mode of the RUN Mode screen can be changed with the cursor key [↑/↓].

※ "COND:" will be displayed in any Run Mode screen.

Please note that the displayed result is that of the last measurement.

① Microbial Biomass Display Mode

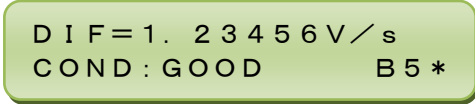
Displays measured microbial biomass.



VAL = 1. 2 3 4 5 6 V / s
COND : GOOD B 5 *

② Differential Value Display Mode

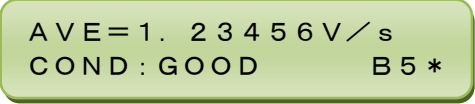
Displays the difference between the last and the one before the last measurement results.



DIF = 1. 2 3 4 5 6 V / s
COND : GOOD B 5 *

③ Average Display Mode

Always displays the average of last 6 measurement results.

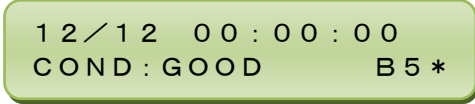


AVE = 1. 2 3 4 5 6 V / s
COND : GOOD B 5 *

※ The average is updated whenever the measurement has been made 6 times.

④ Date and Time Display Mode

Displays the current date and time.



12 / 12 00 : 00 : 00
COND : GOOD B 5 *

⑤ Information Display Mode

Displays the information on the current measurement.



PRO : NOM PAR : 1
COM : WAI ERR : 0 *

- PRO: Measurement Process
PRE: Preprocess, NOM: Normal process, EXT: Extended process
- PAR: Parameter Number
Indicates the parameter number of the measurement underway.
- COM: Communication Status :
WAI: Waiting, EST: communication Established
- ERR: Error Code
Displays an Error Code when an error occurs.
See section 3.2 for Error Code.

⑥ Time Left Display Mode

Displays the time left until current measurement result is output and the time to start next measurement.



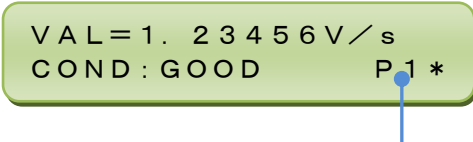
ResultDISP : 1
NextStart : 1 *

- ResultDISP: (minute)
Displays the time until current measurement result is output.
- NextStart: (minute)
Displays the time until next measurement starts.

2. The Display Mode of the RUN Mode screen can be changed with the cursor key [←/→].

① Measurement Record Display Mode

The last 9 measurement records can be recalled.



VAL = 1. 2 3 4 5 6 V / s
COND : GOOD P 1 *

Change the Page number (P1 to P9) with the cursor key to access past records.

2.3.3 PASSWORD Screen

When the Password Lock function is enabled, PASSWORD screen will be displayed after the start up of the device.

Enter the appropriate password.

See section 2.5.6 for how to enable password lock function.

Example:

Following is the steps to log in as an administrator.

1. Enter a password.

The cursor position can be changed with the [←/→] key.

A number and alphabet can be selected with the [↑/↓] key.

A password must be comprised of numbers and/or characters with min length 4 and max length 10.

Press [Enter] key to finish password entry or [Esc] key to cancel the entry.



P A S S W O R D :
0

2. After confirming that “log in: ADMIN” will be displayed on the screen, press the [Enter] key.



l o g i n : A D M I N
P r e s s E n t e r K e y



CAUTION

By performing the above steps, the password is asked whenever trying to switch from RUN mode screen to Select screen and the parameters for administrator cannot be changed without the password entry.



CAUTION

By enabling the password lock function, it is possible to limit the access to the menus (or parameters) by administrator, user and guest. See section 2.5.6. for the detail.

2.4 Select Screen

You can select one of the 3 menus, “Measure”, “Maintenance” or “Setting”, from this screen.

This screen can be accessed by pressing [MENU/Esc] key on RUN Mode screen.

Press the cursor key [↑/↓] to select a menu and press [Enter] key to access the selected menu.

1. MEASURE

Go to RUN Mode screen when [Enter] key is pressed.



(BASE OP SEL)
1. MEASURE

2. MAINTENANCE

Go to Maintenance screen when [Enter] key is pressed.



(BASE OP SEL)
2. MAINTENANCE

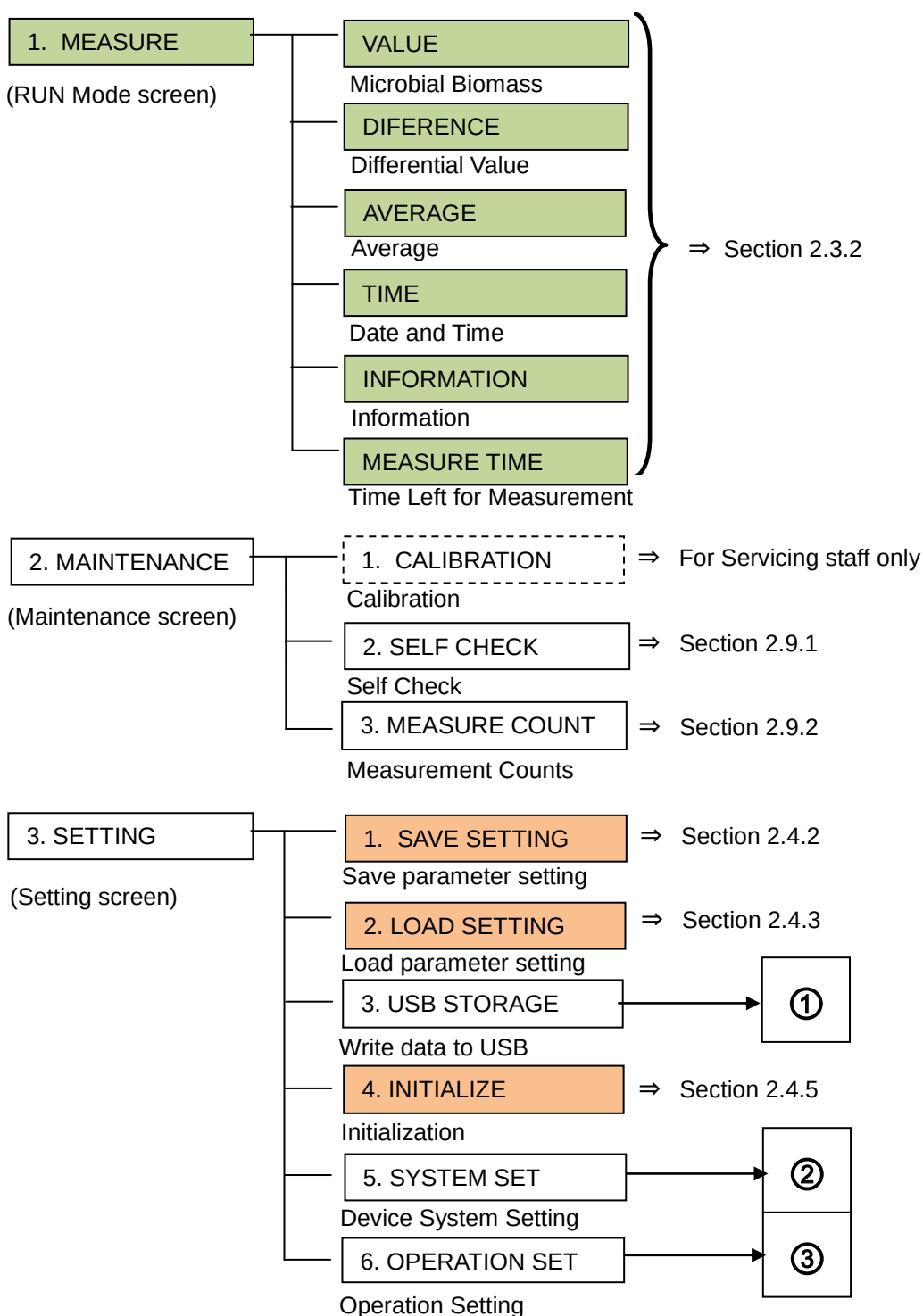
3.SETTING

Go to Setting screen when [Enter] key is pressed.



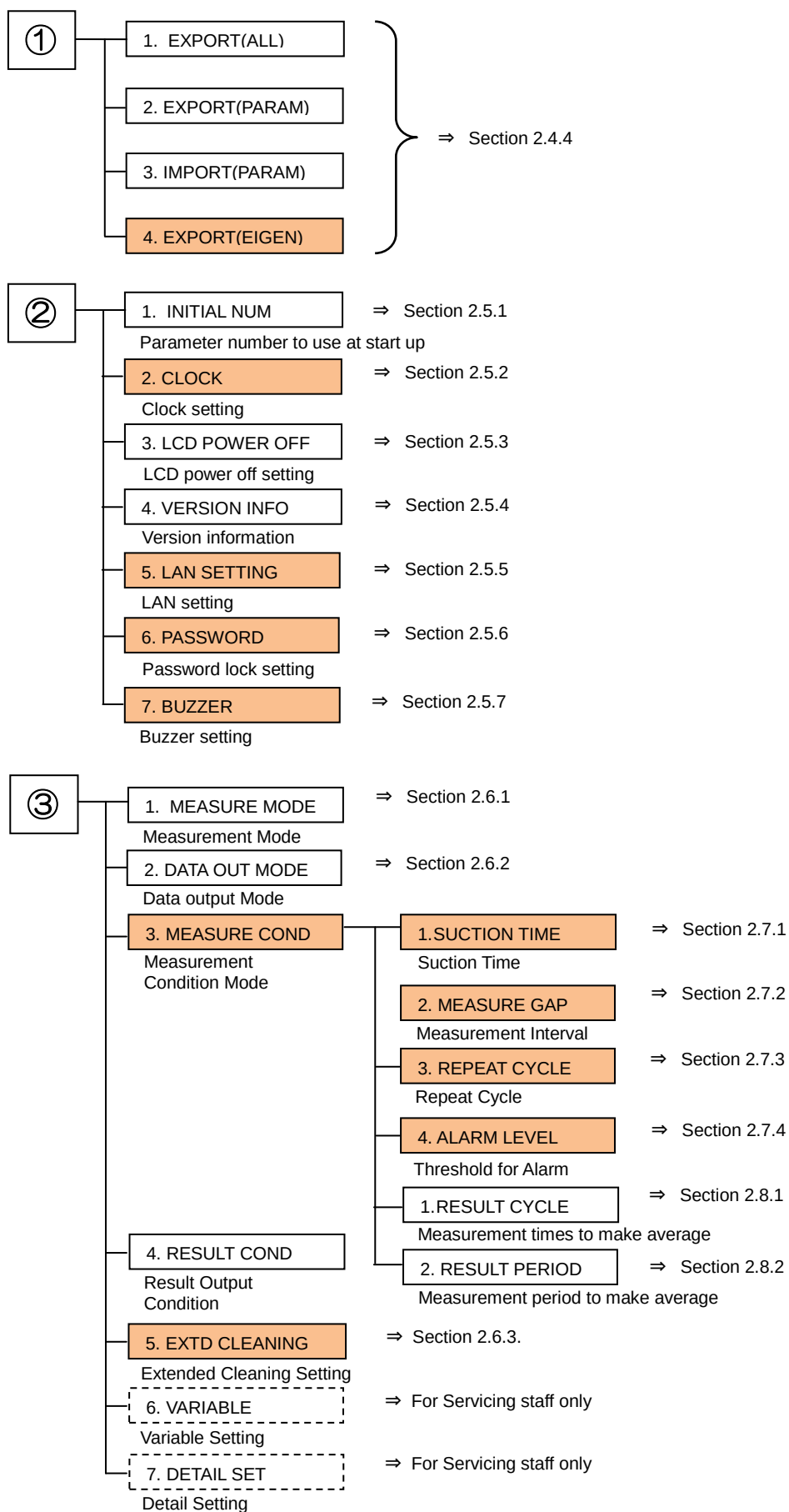
(BASE OP SEL)
3. SETTING

2.4.1 Screen Menu Tree



※ Access Authority:
(When Password Lock
function is enabled).

: Administrator only
 : Administrator + User
 : Everybody



2.4.2 Save Parameter (SAVE SETTING)

What is a parameter?

To make a measurement, sample sucking time, measurement/output mode, etc. must be set. The group of setting is called as a Parameter with this device and saved under a parameter number.

Maximum 100 kinds of parameters can be saved in the internal flash memory of the device.



Use a Parameter number within 1 and 90.

Parameter numbers 91 to 100 are reserved for servicing purpose.

Following is the steps to store a parameter to the internal flash memory.

The saved parameter can be utilized by reading it from the memory.

(See section 2.4.3)

1. Press the cursor key [↑/↓] and select “3.SETTING” on the Select screen and press [Enter] key to access Setting screen. (See section 2.4)

Press the cursor key [↑/↓] and select “1.SAVE SETTING” on the Setting screen and press [Enter] key.

(S E T T I N G)
1 . S A V E S E T T I N G

2. Select a parameter number to save with the cursor key [↑/↓] key.
※ Example: Use “01” as the parameter number.

(S A V E S E T T I N G)
N U M B E R S E L : 0 1

3. Press [Enter] key. “please wait. . . ” will be displayed during the saving.

(S A V E S E T T I N G)
p l e a s e w a i t . . .

4. The Setting screen will be displayed if the saving has been completed successfully.



Please note that data in the selected parameter number is overwritten once “Save Setting” is performed.

2.4.3 Read Parameter (LOAD SETTING)

The stored parameter can be read from the built in flash memory.
Following is the steps to read a parameter from the built in flash memory.

1. Press the cursor key [↑/↓] and select “3.SETTING” on the Select screen and press [Enter] key to access Setting screen. (See section 2.4)

Press the cursor key [↑/↓] and select “2.LOAD SETTING” on the Setting screen and press [Enter] key.



(S E T T I N G)
2 . L O A D S E T T I N G

2. Select a parameter number to read with the cursor key [↑/↓] key.
※ Example: Use “01” as the parameter number.



(L O A D S E T T I N G)
N U M B E R S E L : 0 1

3. Press [Enter] key. “please wait. . . ” will be displayed during the reading.



(L O A D S E T T I N G)
p l e a s e w a i t . . .

4. The Setting screen will be displayed if the saving has been completed successfully.



Parameter under editing is deleted once the “Load Setting” is performed. Please be sure to perform “Save Parameter” to save the parameter under editing before performing “Load Setting”, as necessary. See section 2.4.2.

2.4.4 Export/Import data to/from USB (USB STORAGE)

It is possible to export stored measurement data, parameters and information management file to an USB memory and import parameters from an USB memory.



The USB memory must be FAT32 format without a protection function.



Each item is stored in the device under the file name as follows:

Measurement data (res***.csv)

Parameters (param***.csv)

Information management file (info***.csv)

They are kept in the device even after exporting to USB.



When operating the device on Battery, be sure to fully charge the battery before writing data to USB memory.

Data is not written to USB when battery level goes down to "B0".

1. Connect an USB memory (FAT32 format) to the USB port of this device.
2. Press the cursor key [$\uparrow/\downarrow$] and select "3.USB STORAGE" on the (SETTING) screen and press [Enter] key. (See section 2.4)

(S E T T I N G)
3 . U S B S T O R A G E

3. Press the cursor key [$\uparrow/\downarrow$] and select the desired item and press [Enter] key.
 - Export all the stored data to an USB memory. (EXPORT {ALL})

(U S B S T O R A G E)
1 . E X P O R T { A L L }



E x p o r t :
p l e a s e w a i t ...

Exporting data to an USB memory.

During the exporting, USB lamp turns on and the message [please wait ...] will be displayed.



Export : param000
Press enter key.

When the exporting is finished, USB lamp turns off and the message [Press enter key.] will be displayed.

When the [Enter] key is pressed, (SETTING) screen as shown above step 2 will be displayed.

- ※ The “param000” on the right of “Export” is the file name exported. The number “000” is automatically incremented according to the file name already exists.

Example: If “param000” exists, the data is stored under the file name of “param001”.

- Export parameters to an USB memory. (EXPORT {PARAM})

(USB STORAGE)
2. EXPORT {PARAM}



Export :
please wait...

Exporting data to an USB memory.

During the exporting, USB lamp turns on and the message [please wait ...] will be displayed.



Export : param000
Press enter key.

When the exporting is finished, USB lamp turns off and the message [Press enter key.] will be displayed.

When the [Enter] key is pressed, (SETTING) screen as shown above step 2 will be displayed.

- ※ The “param000” on the right of “Export” is the file name exported. The number “000” is automatically incremented according to the file name already exists.

Example: If “param000” exists, the data is stored under the file name of “param001”.

- Import parameters from an USB memory. (IMPORT {PARAM})

(USB STORAGE)
3. IMPORT {PARAM}



(Import {PARAM})
select: param000

Select the file name to import according to the following steps:
Press the [←] or [→] key and select the digit to change and select the number with the cursor key [↑/↓].
Repeat this until desired number is entered.
Press the [Enter] key.
Import is started.



Import: param000
please wait...

Importing data from an USB memory.
During the importing, USB lamp turns on and the message [please wait ...] will be displayed.



Import: param000
Press enter key.

When the importing is finished, USB lamp turns off and the message [Press enter key.] will be displayed.
When the [Enter] key is pressed, (SETTING) screen as shown above step 2 will be displayed.

4. Remove the USB memory from the USB port of the device.

(Reference) Example of exporting a file to an USB memory

• **Measurement data file: res000.csv**

(res file output example)

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
DataTime	Result	ParameterNumber	MeasureMode	DataOutputMode	PeriodMeasureCount	BioCount Value	Differential Value	Average Value	collection time(sec)
2014/3/24 20:09	GOOD	1,3,1,1,0	408934,0	408934,0	0.068155	300			
2014/3/24 20:19	GOOD	1,3,1,1,0	183635,-0.225299	0.098761	300				
2014/3/24 20:29	NOT DETECTED	1,3,1,1,0	-0.183635	0.098761	300				
2014/3/24 20:39	GOOD	1,3,1,1,0	244524,0	244524,0	0.139515	300			

Output Data

①	DataTime:	Measurement finished time
②	Result:	Result (GOOD,NO GOOD, NOT DETECTED)
③	ParameterNumber:	Measurement parameter number (1 -100)
④	MeasureMode:	Measurement Mode 0: Manual, 1: Auto-Average, 2: Auto-Period, 3: Auto-Every
⑤	DataOutputMode:	Data output mode 0: V/sec, 1: n/m3 (fungi), 2: n/m3 (bacteria)
⑥	PeriodMeasureCount:	Number of measurements for judgment
⑦	BioCount Value:	Microbial biomass
⑧	Differential Value:	Difference value (Previous – Current)
⑨	Average Value:	Average value (Average of last 6 measurements)
⑩	collection time(sec):	Suction time (300 - 7200)

• **Information management file: info000.csv**

(inf file output example)

Item	Value	
MAC Address	34:f6:2d:b5:5c:d5	①
IP Address	192.168.1.210	②
subnet mask	255.255.255.0	③
default gateway	0.0.0.0	④
version info	2.02.0000	⑤

Output Data

①	MAC Address:	MAC address
②	IP Address:	IP address
③	subnet mask:	Subnet mask
④	default gateway:	Default gateway
⑤	version info:	Version information

2.4.5 Initialization (INITIALIZE)

All the parameters and measurement data in the internal flash memory can be initialized.

Following is the steps to initialize the internal flash memory.



All the parameters and/or measurement data in the internal flash memory are lost once the initialization is performed.

1. Press the cursor key [↑/↓] and select “3.SETTING” on the Select screen and press [Enter] key to access Setting screen. (See section 2.4)

Press the cursor key [↑/↓] and select “4.INITIALIZE” on the Setting screen and press [Enter] key.

(S E T T I N G)
4. I N I T I A L I Z E

2. Press the cursor key [↑/↓] and select the area to initialize, “1. ALL” or “2. Result Data” and press [Enter] key.

- ALL: Initialize all the parameters and measurement data.

(I N I T I A L I Z E)
1. A L L

- RESULT DATA: Initialize only the measurement data

(I N I T I A L I Z E)
2. R E S U L T D A T A

3. Confirmation screen for initialization will be displayed.
Press [Right (→)] key to initialize or [Esc] key to cancel the initialization.

I N I T I A L I Z E ? 1
Y E S : R i g h t N O : E s c

4. “please wait. . . ” will be displayed during the initialization.

(I N I T I A L I Z E)
p l e a s e w a i t . . .

5. The device automatically restarts after finishing the initialization.

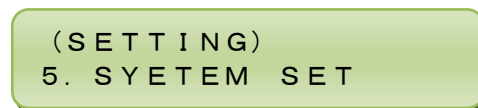
2.5 Device System Setting (SYSTEM SET)

The device system setting, "INITIAL NUM", "CLOCK", "LCD POWER OFF", "VERSION INFO", "LAN SETTING" and "PASSWORD", can be done through this screen.

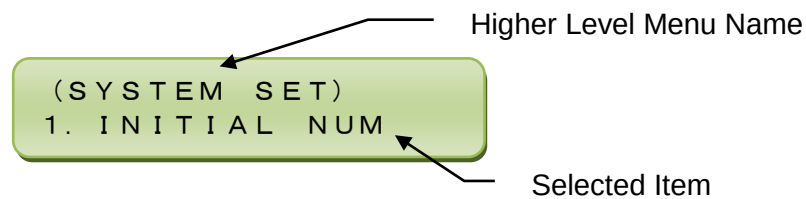
Following is the steps to set the device system.

1. Press the cursor key [↑/↓] and select "3.SETTING" on the Select screen and press [Enter] key to access Setting screen. (See section 2.4)

Press the cursor key [↑/↓] and select "5.SYETEM SET" on the Setting screen and press [Enter] key.



2. The screen displays the first menu under "System SET" screen.



2.5.1 Parameter Number to use at Startup (INITIAL NUM)

Following is the steps to set the parameter number to use at start up.

1. Press the cursor key [↑/↓] and select “5.SYETEM SET” on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select “1.INITIAL NUM” on the System Set screen and press [Enter] key.



(SYSTEM SET)
1. INITIAL NUM

2. Press the cursor key [↑/↓] and select the “parameter number to use (01 to 100) at start up” on the INITIAL NUM screen and press [Enter] key.
※ Example: Use “01” as the parameter number.



(INITIAL NUM)
NUMBER SEL : 01

3. The System Set screen will be displayed.

2.5.2 Clock Setting (CLOCK)

Following is the steps to set the clock.

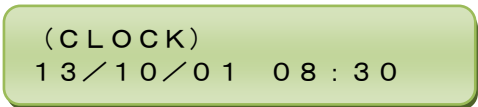
1. Press the cursor key [↑/↓] and select "5.SYETEM SET" on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select "2.CLOCK" on the System Set screen and press [Enter] key.



(SYSTEM SET)
2. CLOCK

2. Press the cursor key [←/→] and select Year (last 2 digits), Month, Date, Hour or Minute position and enter the appropriate value with the cursor key [↑/↓].
 - ※ The cursor position is indicated by blinking "##".
 - ※ Depressing the cursor keys [↑/↓] changes the value in 10 steps.



(CLOCK)
13/10/01 08:30

3. After confirming the data entered, press [Enter] key to set the clock or [Esc] key to cancel.
The System Set screen will be displayed.

2.5.3 LCD Power Off (LCD POWER OFF)

Following is the steps to set the time to turn off back light of LCD display automatically for saving battery power.

1. Press the cursor key [↑/↓] and select "5.SYETEM SET" on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select "3.LCD POWER OFF" on the System Set screen and press [Enter] key.



(SYSTEM SET)
3. LCD POWER OFF

2. Press the cursor key [↑/↓] and set the time to turn off back light of LCD display within 00 and 60 minutes.
※ When 00 is set, the back light turns on continuously.



(LCD POWER OFF)
10min (00:NO OP)

3. After confirming the entered data, press [Enter] key to set the time or [Esc] key to cancel.
The System Set screen will be displayed.

2.5.4 Version Information (VERSION INFO)

Following is the steps to check the version information of this device.

1. Press the cursor key [↑/↓] and select “5.SYETEM SET” on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select “4.VERSION INFO” on the System Set screen and press [Enter] key.



(SYSTEM SET)
4. VERSION INFO

2. After confirming the displayed version information, press [Enter] key.
The System Set screen will be displayed.



(VERSION INFO)
1. 00. 0000

2.5.5 LAN Setting (LAN SETTING)

Following is the steps to do LAN related setting of this device.

※ Check with your network administrator for the setting details.

1. Press the cursor key [↑/↓] and select “5.SYETEM SET” on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select “5.LAN SETTING” on the System Set screen and press [Enter] key.



(SYSTEM SET)
5. LAN SETTING

2. Press the cursor key [↑/↓] and select the item for TCP/IP setting and press [Enter] key.

- 1. IP Address (IP ADDRESS)



(LAN SETTING)
1. IP ADDRESS



(IP ADDRESS)
192. 168. 001. 010

Press the cursor key [←/→] and select the position to input the IP address and enter the number with the cursor key [↑/↓].

After confirming the displayed IP address, press [Enter] key to set the address or [Esc] key to cancel the entry.

- 2. Subnet Mask (SUBNET MASK)



(LAN SETTING)
2. SUBNET MASK

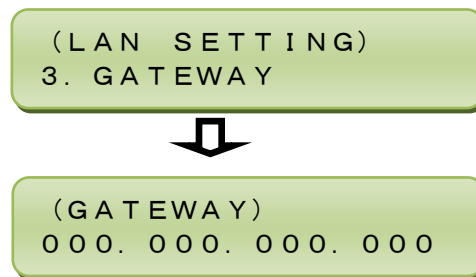


(SUBNET MASK)
255. 255. 255. 000

Press the cursor key [←/→] and select the position to input subnet mask and enter the number with the cursor key [↑/↓].

After confirming the displayed Subnet Mask, press [Enter] key to set the address or [Esc] key to cancel the entry.

• 3. Default Gateway (GATEWAY)



Press the cursor key [←/→] and select the position to input gateway and enter the number with the cursor key [↑/↓].

After confirming the displayed gateway, press [Enter] key to set the address or [Esc] key to cancel the entry.

3. After TCP/IP related setting is finished and [Enter] key is pressed, a screen to prompt rebooting (once turn off and then turn on) of the device will be displayed.
Press [Enter] key.



4. Once turn off the Power Switch of the device and then turn it on to reboot and update the TCP/IP setting of the device.



TCP/IP related setting becomes effective only after the device is rebooted.

2.5.6 Password Lock (PASSWORD)

By enabling this password lock function, it is possible to limit the access to the menus (or parameters) of this device by administrator, user and guest.

This function is helpful in preventing unintended change of the parameters by not authorized personnel.

Please see section 2.4.1 Screen Menu Tree for the accessible menu.

1. Press the cursor key [$\uparrow/\downarrow$] and select "5.SYETEM SET" on the Setting screen and press [Enter] key.

Press the cursor key [$\uparrow/\downarrow$] and select "6.PASSWORD" on the System Set screen and press [Enter] key.



(SYSTEM SET)
6. PASSWORD

2. Press the cursor key [$\uparrow/\downarrow$] and select the item to set and press [Enter] key.

- Password setting for Administrator (ADMINISTRATOR)



(PASSWORD)
1. ADMINISTRATOR



- Enter old password. (Default: 0000)



(ADMIN) OLD :
0000

Use [$\leftarrow/\rightarrow$] key to select cursor position and enter the old password with [$\uparrow/\downarrow$] key.

After confirming the displayed password, press [Enter] key or [Esc] key to cancel.

※ Once [Esc] key is pressed, password needs to be entered from the first character.



- Enter a new password comprised of numbers and/or characters with min length 4 and max length 10.



(ADMIN) NEW :
0000

After confirming the displayed password, press [Enter] key or [Esc] key to cancel.



- Check again that displayed password is what you have entered.

(ADMIN) AGAIN :
0 0 0 0

Press [Enter] key to register the password or [Esc] key to cancel.

- Password setting for USER (USER)

(PASSWORD)
2. USER



- Enter old password. (Default: 0000)

(USER) OLD :
0 0 0 0

Referring to the steps under “Password setting for Administrator”, register a password for a User.

- Password setting for Guest (GUEST)

(PASSWORD)
3. GUEST



- Enter old password.(Default: 0000)

(GUEST) OLD :
0 0 0 0 0 0 0 0 0 0

Referring to the steps under “Password setting for Administrator”, register a password for a Guest.

- Password Lock Function (ON/OFF)

(PASSWORD)
4. ON/OFF



Select ON or OFF of the password lock function with the [↑/↓] key.

(ON/OFF)
ON

Press [Enter] key to register the change for password lock function or [Esc] key to cancel.



Once this function is set to ON, password is asked to go into Setting Screen.



Never change the password for “SPECIAL” that is for Servicing staff use.

3. After password setting is finished and [Enter] key is pressed, a screen to prompt rebooting (once turn off and then turn on) of the device will be displayed.

Press [Enter] key.

PLEASE REBOOT
Press Enter Key

4. Once turn off the Power Switch of the device and then turn it on to reboot and update the Password Lock function of the device.



Password related setting becomes effective only after the device is rebooted.

2.5.7 Buzzer (BUZZER)

The built in Buzzer can be enabled or disabled.

1. Press the cursor key [$\uparrow/\downarrow$] and select "5.SYETEM SET" on the Setting screen and press [Enter] key.

Press the cursor key [$\uparrow/\downarrow$] and select "7.BUZZER" on the System Set screen and press [Enter] key.



(SYSTEM SET)
7. BUZZER

2. Press the cursor key [$\uparrow/\downarrow$] and select either ON or OFF.
When the Buzzer is enabled (set to ON), it sounds when the measurement result exceeded the threshold (See section 2.7.4.) or in an error



The buzzer never sounds when "BUZZER" is set to OFF.



(ON/OFF)
ON

3. After confirming the buzzer setting, press [Enter] key or [Esc] key to cancel.
The System Set screen will be displayed.

2.6 Operation Setting (OPERATION SET)

This screen is used to set the condition of a parameter.

Maximum 100 kinds of parameters can be stored in the device.

1. Press the cursor key [↑/↓] and select “3.SETTING” on the Select screen and press [Enter] key.

Press the cursor key [↑/↓] and select “6.OPERATION SET” on the Setting screen and press [Enter] key.



(SETTING)
6. OPERATION SET

2. Press the cursor key [↑/↓] and select the parameter number to edit and press [Enter] key.

※ Example: Use “01” as the parameter number.



(OPERATION)
NUMBER SEL : 01

3. The first menu of Operation Setting screen will be displayed.



Higher Level Menu Name
Parameter Number
Selected Item

(OPERATION) 01
1. MEASURE MODE



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

2.6.1 Measurement Mode (MEASURE MODE)

This screen is used to select a mode for microbial biomass measurement:

“1: MANUAL”, “2. AUTO-AVERAGE”, “3. AUTO-PERIOD” or “4. AUTO-EVERY”.

1. Press the cursor key [↑/↓] and select “6.OPERATION SET” on the Setting screen and press [Enter] key.

Press the cursor key [↑/↓] and select “1.MEASURE MODE” on the Operation Setting screen and press [Enter] key.



(OPERATION) 0 1
1. MEASURE MODE

2. Press the cursor key [↑/↓] and select a measurement mode and [Enter] key.

- 1. Manual (Single measurement).



(MEAS MODE) 0 1
1. MANUAL

- 2. AUTO-AVERAGE (Continuous measurement)
Judge based on Average of set measurement times.
(See section 2.8.1)



(MEAS MODE) 0 1
2. AUTO-AVERAGE

- 3. AUTO-PERIOD (Continuous measurement)
Judge based on Average of set measurement period.
(See section 2.8.2)



(MEAS MODE) 0 1
3. AUTO-PERIOD

- 4. AUTO-EVERY (Continuous measurement)
Judge upon each measurement.



(MEAS MODE) 0 1
4. AUTO-EVERY

1. After confirming the selected measurement mode, press [Enter] key or [Esc] key to cancel. The Operation Set screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

2.6.2 Data Output Mode (DATA OUT MODE)

This screen is used to select the data output format:

V/s: Fluorescent intensity or **n/M³**: fungi or bacteria equivalent.

1. Press the cursor key [$\uparrow/\downarrow$] and select “6.OPERATION SET” on the Setting screen and press [Enter] key.

Press the cursor key [$\uparrow/\downarrow$] and select “2.DATA OUT MODE” on the Operation Setting screen and press [Enter] key.

```
( OPERATION )      0 1
2. DATA OUT MODE
```

2. Press the cursor key [$\uparrow/\downarrow$] and select the desired output mode on the DOUT MODE Setting screen and then press [Enter] key.

- Fluorescent intensity (V/s)

The output of internal light receiving element will be displayed.

```
( DOUT MODE )      0 1
1. V / s
```

- Fungi equivalent (n/M3)

Outputs number of microbes assuming that all is fungi.

```
( DOUT MODE )      0 1
2. n / M3 ( f u n g i )
```

- Bacteria equivalent (n/M3)

Outputs number of microbes assuming that all is bacteria.

```
( DISP MODE )      0 1
3. n / M3 ( b a c t e r i a )
```

3. After confirming the selected data output mode, press [Enter] key or [Esc] key to cancel. The Operation Set screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

2.6.3 Extended Cleaning Setting (EXTD CLEANING)

This screen is used to set the extended cleaning or deep cleaning of the Collection Plate in addition to the normal cleaning process.

1. Press the cursor key [$\uparrow/\downarrow$] and select “6.OPERATION SET” on the Setting screen and press [Enter] key.

Press the cursor key [$\uparrow/\downarrow$] and select “5.EXTD CLEANING” on the Operation Setting screen and press [Enter] key.

(OPERATION) 0 1
5. EXTD CLEANING

2. Press the cursor key [$\uparrow/\downarrow$] and select the operating environment on the Extended Cleaning Setting screen and then [Enter] key.

- Clean Room Measurement Mode
Extended cleaning is not done.

(EXTD CLEANI) 0 1
1. CLEAN ROOM

※Clean Room: Grade C (ISO Class8) equivalent.

- General Room Measurement Mode
Extended cleaning is done after each measurement.

(EXTD CLEANI) 0 1
2. GENERAL ROOM

※General environment (like an office)

- Custom
Used to set number of measurements to start extended cleaning.

(EXTD CLEANI) 0 1
3. CUSTOM



Set number of measurements to start extended cleaning.
(Default: 70, EXTD Cleaning is done every 70 measurements)

(EXTD CLEANI) 0 1
0 7 0 (max 200)

Press the cursor key [$\leftarrow/\rightarrow$], select the position and enter the appropriate value (0 – 200) with the cursor key [$\uparrow/\downarrow$].
Then press [Enter] key to change the setting or [Esc] key to cancel.

3. After confirming the setting, press [Enter] key or [Esc] key to cancel.
The Operation Set screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.



It is suggested to set the operating environment to “Clean Room” when the device is used under Grade C (ISO Class8) or higher

Grade C:

1000CFU/m³ (Microbes) or less

Acceptable maximum number of particles with diameter 0.5μm:

During Non-working: 352,000 pcs./m³

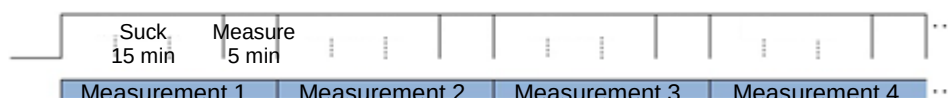
During working: 3,520,000pcs./m³



The time for Extended Cleaning is fixed and 10 minutes.

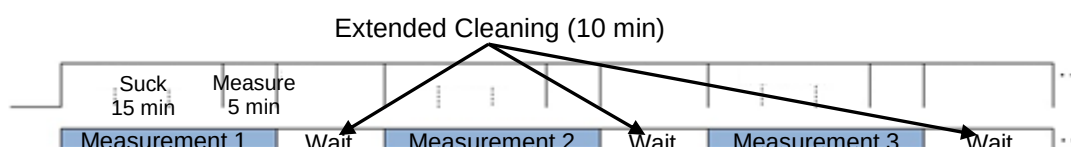
Example 1: Extended Cleaning = “1.CLEAN ROOM”

The cleaning is not done.



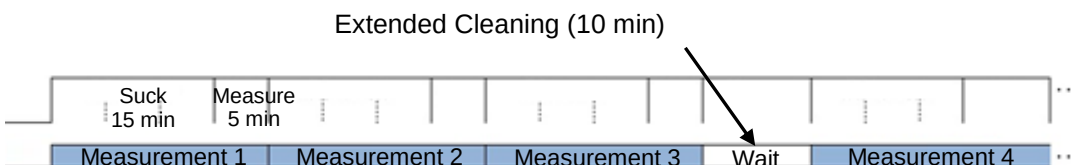
Example 2: Extended Cleaning = “2.GENERAL ROOM”

The cleaning is done after each measurement



Example 3: Extended Cleaning = “3.CUSTOM” and “x 3”

The cleaning is done after every 3 measurements.



2.7 Measurement Condition (MEASURE COND)

This screen is used to set the Measurement Condition of each parameter number:

“Suction time”, “Measurement Gap (Interval)”, “Repeat Cycle” and “Alarm Level”.

1. Press the cursor key [↑/↓] and select “3.SETTING” on the Select screen and press [Enter] key.

Press the cursor key [↑/↓] and select “6.OPERATION SET” on the Operation Setting screen and press [Enter] key.



(SETTING)
6. OPERATION SET

2. Press the cursor key [↑/↓] and select the parameter number to edit and press [Enter] key.
※ Example: Use “01” as the parameter number.



(OPERATION)
NUMBER SEL : 01

3. Press the cursor key [↑/↓] until “3.MEASURE COND” will be displayed and press [Enter] key.



(OPERATION) 01
3. MEASURE COND

4. The first menu of “MEAS COND” will be displayed.



(MEAS COND) 01
1. SUCTION TIME

2.7.1 Suction Time (SUCTION TIME)

This screen is used to set the suction time of the airborne sample.
The sample is sucked at 20L/minute.



Suction time of 5 minutes is recommended considering the contamination of the plate.

1. Press the cursor key [↑/↓] and select “1.SUCTION TIME” on the Measurement Condition screen and press [Enter] key.

See section 2.7 for how to access Measurement Condition screen.



(MEAS COND) 01
1. SUCTION TIME

2. Press the cursor key [↑/↓] and set the suction time.
The time can be set in 1 minute step within 5 minutes to 2 hours.



(SUCTION TIME)
0h05min (max 2h)

3. After confirming the time entered, press [Enter] key to set the time or [Esc] key to cancel.
The Measurement Condition screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.



Stable measurements can be expected by setting the suction time longer when the cleanliness level of the sample is high.
Contamination to the sample Collection Plate can be minimized by setting the suction time shorter.

2.7.2 Measurement Interval (MEASURE GAP)

This screen is used to set the measurement interval.

The measurement is done at the set interval.

1. Press the cursor key [$\uparrow/\downarrow$] and select “2.MEASURE GAP” on the Measurement Condition screen and press [Enter] key.

See section 2.7 for how to access Measurement Condition screen.

(MEAS COND) 01
2. MEASURE GAP

2. Press the cursor key [$\leftarrow/\rightarrow$] and select the cursor position and enter the appropriate value with the cursor key [$\uparrow/\downarrow$].
The interval can be set in 1 minute step within 10 minutes to 24 hours.
 - ※ The cursor position is indicated by blinking “##”.
 - ※ Depressing the cursor keys [$\uparrow/\downarrow$] changes the value in 10 steps.

(MEAS GAP) 01
00h10min (max 24h)

3. After confirming the time entered, press [Enter] key to set the time or [Esc] key to cancel. The Measurement Condition screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

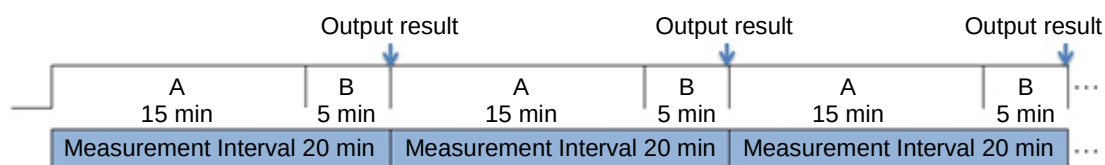


The measurement GAP (interval) must be set such that it is longer than the “Suction Time” (Section 2.7.1) + 5 minutes (Inspection Time).

Example:

Set the MEAS GAP to 10 min or more when the Suction Time is 5 min.

Example: Suction Time: 15 min, Inspection Time: 5 min (fixed),
Measurement Interval: 20 min



A: Suction Time, B: Inspection Time

2.7.3 Repeat Cycle (REPEAT CYCLE)

This screen is used to set the repeat cycle of the measurement.

The measurement is stopped after it has been done for the set repeat cycle.

1. Press the cursor key [$\uparrow/\downarrow$] and select “3.REPEAT CYCLE” on the Measurement Condition screen and press [Enter] key.

See section 2.7 for how to access Measurement Condition screen.



(MEAS COND) 01
3. REPEAT CYCLE

2. Press the cursor key [$\uparrow/\downarrow$] and set the repeat cycle.
The repeat cycle can be set to “NO-LIMIT” or within 01 to 99.
NO-LIMIT means continuous and will be displayed when 0 is set with the cursor key.

※ Depressing the cursor keys [$\uparrow/\downarrow$] changes the value in 10 steps.



(REPEAT CYC) 01
03 (max 99)

3. After confirming the cycle entered, press [Enter] key to set the cycle or [Esc] key to cancel. The Measurement Condition screen will be displayed.



CAUTION

When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

2.7.4 Alarm Threshold (ALARM LEVEL)

This screen is used to set the alarm level or alarm threshold for OK/NG judgment.

The device activates the built in buzzer when the measurement result exceeded the alarm threshold.

Note: The device continues next measurement even if the measurement result exceeded the threshold without stopping automatically.

The buzzer stops automatically when the measurement result goes below the threshold in the succeeding measurements.

※ Depress the (←) key to stop buzzer.

1. Press the cursor key [↑/↓] and select “4.ALARM LEVEL” on the Measurement Condition screen and press [Enter] key.

See section 2.7 for how to access Measurement Condition screen.



(MEAS COND) 01
4. ALARM LEVEL

2. Press the cursor key [↑/↓] and set the alarm level.

※ Depressing the cursor keys [↑/↓] changes the value in 10 steps.

- When the Data Output Mode = “V/s”:

Set to “NO-LIMIT” or within 1 to 100.



(ALARM LEVEL) 01
50 (V/s)

※NO-LIMIT will be displayed when 0 is set with the cursor key.

- When the Data Output Mode = “n/m3”:

Set to “NO-LIMIT” or within 1 to 100 (x 10,000).



(ALARM LEVEL) 01
50 x 10,000 (n/m3)



Judgment result is always “GOOD” when “NO-LIMIT” is set.

3. After confirming the cycle entered, press [Enter] key to set the cycle or [Esc] key to cancel. The Measurement Condition screen will be displayed.



When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

2.8 Result Output Condition (RESULT COND)

This screen is used to set the Result Output Condition when “AUTO-AVERAGE” or “AUTO-PERIOD” is set for the Measurement Mode (See section 2.6.1)

1. Press the cursor key [↑/↓] and select “6.OPERATION SET” on the Setting screen and press [Enter] key.



(SETTING)
6. OPERATION SET

2. Press the cursor key [↑/↓] and select the parameter number to edit and press [Enter] key.

※ Example: Use “01” as the parameter number.



(OPERATION)
NUMBER SEL : 01

3. Press the cursor key [↑/↓] and select “4.RESULT COND” and press [Enter] key.



(OPERATION) 01
4. RESULT COND

4. The first menu of “RESULT COND” screen will be displayed.



(RESULT COND) 01
1. RESULT CYCLE

2.8.1 Measurement Times (MEASTIMES AVE)

This screen is used to set the Result Output Condition when “AUTO-AVERAGE” is set for the Measurement Mode (See section 2.6.1)

1. Press the cursor key [$\uparrow/\downarrow$] and select “1.RESULT CYCLE” on the Result Condition screen and press [Enter] key.

See section 2.8 for how to access Result Condition screen.

```
(RESULT COND) 0 1
1. RESULT CYCLE
```

2. Press the cursor key [$\leftarrow/\rightarrow$] and select the cursor position and enter the measurement times to make the average with the cursor key [$\uparrow/\downarrow$]. The times can be set within 0 to 99.

```
(RESULT CYC) 0 1
0 3          (max 99)
```

3. After confirming the measurement times entered, press [Enter] key to set the time or [Esc] key to cancel. The Result Output Condition screen will be displayed.

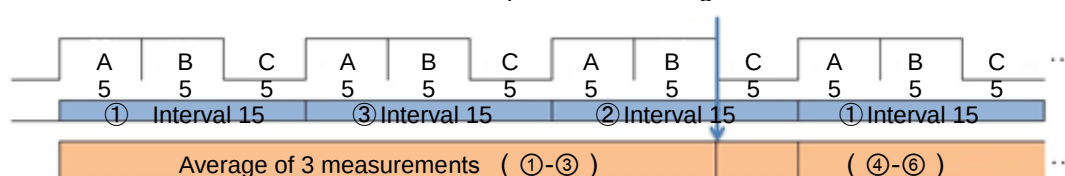


When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

Example:

Measurement Gap (Interval): 15 minutes,
RESULT CYCLE (Measurement Times): 3

Output result: Average of 3 measurements



A: Suction Time, B: Inspection Time, C: Wait Time (Unit: minute)

2.8.2 Measurement Period (MEASPERIOD AVE)

This screen is used to set the Result Output Condition when “AUTO-PERIOD” is set for the Measurement Mode (See section 2.6.1)

1. Press the cursor key [$\uparrow/\downarrow$] and select “2.RESULT PERIOD” on the Result Condition screen and press [Enter] key.

See section 2.8 for how to access Result Condition screen.

(RESULT COND) 01
2. RESULT PERIOD

2. Press the cursor key [$\leftarrow/\rightarrow$] and select the cursor position and enter the measurement period to make the average with the cursor key [$\uparrow/\downarrow$].
The period can be set within 0 minute to 2 hours
※ . Depressing the cursor keys [$\uparrow/\downarrow$] changes the value in 10 steps.

(RESULT PERI) 01
00h30min (max 24h)

3. After confirming the measurement period entered, press [Enter] key to set the period or [Esc] key to cancel.
The Result Output Condition screen will be displayed.

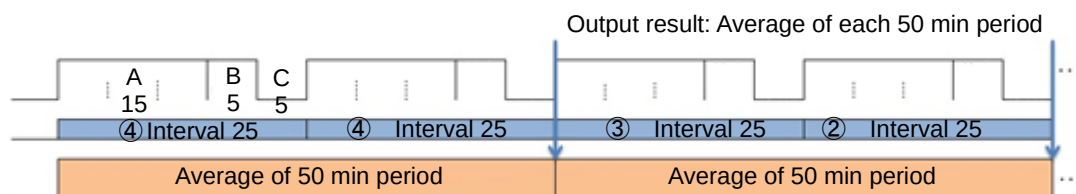


When the device power is turned off before storing a parameter under changing, the parameter keeps old data.
See section 2.4.2 for Save Setting.

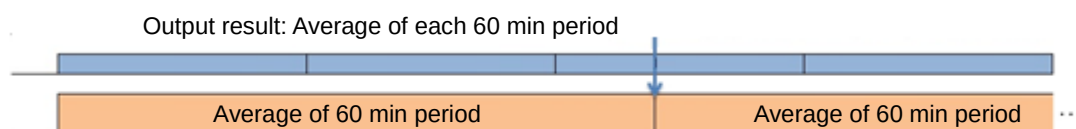


The Measurement Period must be set such that it is longer than the “Suction Time” (Section 2.7.1) + 5 minutes (Inspection Time).
Example:
Set the MEAS GAP to 10 min or more when the Suction Time is 5 min.

Example 1: Measurement GAP (Interval): 25 min, Result (measurement) Period: 50 min



Example 2: Measurement GAP (interval): 25 min, Result (measurement) Period: 60 min



A: Suction Time, B: Inspection Time, C: Wait Time (Unit: minute)

2.9 Maintenance Screen

This screen is used to do self check, measurement count check and calibration of the device.

1. Press the cursor key [↑/↓] and select “2.MAINTENANCE” on the Select screen.

2.9.1 Self Check (SELF CHECK)

The device does self check of the following items and also enables user to check normal operation of the displays

No.	Display	Checked Item
01	RAM	RAM
02	ROM	Flash memory
03	BAT	Battery
04	FAN	Fan
05	LED	LED
06	LCD	LCD
07	RBT	RTC battery
08	RTC	RTC

No.	Display	Checked Item
09	PAS	Parameter No., Check sum
10	PRS	Program., Check sum
11	BZZ	Buzzer
12	MTR	Motor
13	PD	Photo diode
14	HTR	Heater
15	BTN	Keys
16	WDT	Watch Dog Timer

1. Press the cursor key [↑/↓] and select “2.SELF CHECK” on the Maintenance screen and press [Enter] key.

(MAINTENANCE)
2. SELF CHECK

2. Press the cursor key [↑/↓] and select the item to check:
“1.ALL”, “2.RAM”, ..., “17. WDT” and press [Enter] key

- When “1. ALL” is selected and all the self check items are going to be checked:

(SELF CHECK)
1. ALL (SUCCESS)

Status Display

- NOT RUN: Check has not been done.
- SUCCESS: No problems
- FAILED: An error was found
- NONE:: Need check by user

- When an individual item is going to be checked: (like RAM)

```
(INITIALIZE)
2. RAM (SUCCESS)
```

3. When “1. ALL” is selected, the check item number underway will be displayed on the right of top line.

```
self check 01
LED          check
```

4. After the self check is completed, the result will be displayed.

- When “1. ALL” is selected:

- No Errors

The device reboots automatically and displays RUN mode screen.

```
VAL=0. 00000V/s
COND :          B5
```

- An error was found (Example: 13 Heater error)

The device stops when an error is found.

Press [Esc] key to continue.

The device reboots automatically and displays RUN mode screen.

```
self chk failed
13 heater
```

- When an individual item is checked: (like RAM)

The check result will be displayed at the Result Display after the test is finished.

```
(SELF CHECK)
2. RAM (SUCCESS)
```

Result Display

The self check detailed result can be accessed with [←/→] key for “9.RTC”, “11.RTC”, “14.PD” and “15.HTR”.

Press [←/→] key in detail result screen to go back to the previous screen.

```
(SELF CHECK)
11. PRS (SUCCESS)
```

```
(SELF CHECK)
CHSUM VAL=f584
```

2.9.2 Measurement Counts Check (MEASURE COUNT)

This screen is used to check the measurement counts of the device to know if the sample Collection Plate needs replacement.

It is suggested to replace it once every 5,000 measurements.

1. Press the cursor key [↑/↓] and select “3.MEASURE COUNT” on the Maintenance screen and press [Enter] key.



(MAINTENANCE)
3. MEASURE COUNT

2. The Measurement count will be displayed.
Press [Enter] key to return to Maintenance screen.



(MEASURE COUNT)
00001



The measurement results may become inaccurate after 5,000 measurements under Grade C (ISO Class 8) equivalent operating environment.



Please contact your dealer for the replacement of the Collection Plate.



Others

3.1 Troubleshooting

Error Message	Cause	Countermeasure
UNAUTHHORIZED	A menu was accessed by not-authorized personnel.	Ask your administrator to allow your access to the menu.
INVALID SETTING	Invalid parameter was set.	Set an appropriate parameter: • Suction time must be Measurement GAP – 5 min or less. • Measurement GAP must be Suction time + 5 min or more.
FAN NOT RUNNING	Fan did not operate normally and the measurement was stopped.	Turn OFF the power of the device and do not use it Contact your dealer for check and repair.
HEATER ABNORMAL	Heater did not operate.	Turn OFF the power of the device and do not use it Contact your dealer for check and repair.
MOTOR ABNORMAL	Motor did not operate.	
PD ABNORMAL	The output of photo-diode was abnormal: (< 0 or >200)	Calibration and/or maintenance of the device is required. Contact your dealer for check and repair.

Error Message/Problem	Cause	Countermeasure
UPDATE FAILED	Tried to set a parameter when the battery voltage has gone down to 10% or less during measurement.	Charge the optional battery. If the problem persists even after the charging, contact your dealer for check and repair.
BATTERY ST ERR	The device stopped because battery voltage has gone down to 10% or less (B0) during measurement.	
Buzzer sounds on and off every 1 second	The battery voltage has gone down to 30% or less (B2-BO).	
self chk failed	An error was found in the self check at power on.	Once turn OFF and then ON the device. If the problem persists even after the rebooting, contact your dealer for check and repair.
LCD screen went off and nothing is displayed.	Abnormal signal on LCD signal line, like noise.	Intialize the LCD by depressing one of [←/→] [↑/↓] key. If the problem persists even after the depressing, contact your dealer for check and repair.

3.2 Error Code

An Error Code will be displayed when an error occurs. (See section 2.3.2 ㊟).

The cause and countermeasure of each error code are as follows:

Error Code	Error LED Status	Cause	Countermeasure
0	OFF	Normal No errors have occurred after power on.	
1	ON/OFF (every 1sec)	Sample measurement times exceeded 5,000.	Calibration and/or maintenance of the device is required. Contact your dealer for check and repair.
2	ON	Fan did not operate normally	Turn OFF the power of the device and do not use the device. Contact your dealer for check and repair.
3	ON	Battery voltage has gone down to 10% or less (B0).	Charge the optional battery. If the problem persists even after the charging, contact your dealer for check and repair.
4	ON	Temperature increase of the Battery.	Turn OFF the power of the device, remove the battery from the device and do not use the device. Contact your dealer for check and repair.
5	ON	Low battery voltage error has occurred.	
6	ON	Heater did not operate.	Turn OFF the power of the device and do not use the device. Contact your dealer for check and repair.
7	ON	Motor did not operate.	
8	ON	The output of photo-diode was abnormal: (< 1 or > 200)	Calibration and/or maintenance of the device is required. Contact your dealer for check and repair.

3.3 How to identify failure

- If a problem occurs, do not use the device.
Turn off the Power Switch of the device and unplug the power cord.
It is dangerous to use or repair the device with a problem by yourself.
- If the device needs repair service, contact your dealer and let them know the model number of the device, BM-300C, and details of the problem.
Note: Even during the Warranty Period, costs for removing or installing parts and shipping cost will be charged.
- If the device has one of the following problems, the device may not be defective. Carefully check the device before you contact your dealer.

Problem	Check Point
Power cannot be turned on (when using AC adapter)	1. The cause may be power failure. 2. Check that the main power is turned on. 3. Check secure connection of the power cord.
Power cannot be turned on (when using Battery)	1. Is the battery fully charged? 2. Is the battery once charged before initial use of the battery? (It is in power off mode at the time of factory release)
LCD does not turn on.	1. Is the power switch on?
(BOOT MODE) waiting Is displayed at power on and start up screen is not displayed	1. [Esc] key may be pressed at power on. Once turn off the power, release pressing of [Esc] key and turn on the power.
Battery compartment does not open.	2. Is the cam lock released? 3. Is nothing blocking the battery compartment open?
Buzzer turns on continuously	1. Is not the measured value above alarm threshold? (See section 2.7.4) ※ Depress ← key to turn off the buzzer. 2. Is the battery fully charged?
Communication is disabled.	1. Is the LAN cable connected securely? 2. Is the IP address setting correct?

- For the repair after the Warranty Period, please consult your dealer.
The defective Device will be repaired at reasonable charge if it is judged that the function can be maintained after repair.
The maximum repair available period is seven (7) years after the discontinuance of the Device production.
- Sharp Manufacturing Systems Corporation or the dealer cannot accept the repair of the Device that has been used in where biohazardous substances were used or existed even during the Warranty Period.

3.4 Specifications

Item	Specifications
Detection Method	Fluorescence detection (Increase self fluorescence by Heat)
Recommended Cleanliness Class	Grade C (ISO Class 8) or equivalent
Measuring Object	Airborne microbes (Fungi, Bacteria, etc.), 1 to 10 μ m ✕ Separate with a cyclone
Measurement Environment	General room, Simple clean room
Sample Suction Volume	20L/minute
Measurement Mode	Manual (1 time measurement and judgment) Automatic (Automatic measurement and judgment) AUTO-Average (Average of set cycles) AUTO-Period (Average of set period) ATUO-Every (1 time measurement)
Result Display Mode Microbial biomass Differential value	Displays measured microbial biomass. Displays the difference between the last and the one before the last measurement results. (V/s)
Setting	
Sampling Time	5 to 120 minutes (in 1 minute step)
Inspection Time	5 minutes (fixed)
Measurement Interval	Continuous, 10 to 1440 (24 hours) minutes (in 1 minute step)
Number of Measurements	Continuous, 1 to 99 times
Calendar/Timer	YYYY/MM/DD, hh/mm/ss
Display	
Microbes	V/sec or n/m ³
Judgment Result	GOOD, NO GOOD, N.D. (Not Detected)
Measurement Counts	Number of measurements done
Battery Life	10 Levels
Data Output Mode	Fluorescence intensity (V/sec) or Calculated Microbial Biomass (pcs/m ³)
Access Authority	Administrator/User/Guest
Parameters Setting	Maximum 100
Data Storage	Maximum 5,000 measurements (Built in memory)
Data File Format	CSV
Light Source	Semiconductor LASER
Receiving Element	Photodiode

Item		Specifications
Power Supply	AC Adapter	100 to 240 VAC, 50/60Hz
	Battery (Option)	Lithium Ion Rechargeable battery, Operation: Max 16 hours continuous operation ^{*1} Recharging: 4 hours
Power Consumption		AC Adapter: 28 VA
		Optional Battery: 8 W
Operating Environment		10 to 40 °C, 85% RH or less (non condensing)
Storage Environment		-10 to 50 °C, 90% RH or less (non condensing)
Dimensions		W214 x D214 x H194.5 mm (excluding protrusions)
Weight		3.5 kg, 4 kg (with optional battery)
External Interface	LAN	1 port (10BASE-T/100BASE-TX)
	USB	1 port (USB2.0) Only for a FAT formatted USB memory
Display		Monochrome LCD 2 lines x 16 characters (Alpha and numeric)
Controls		Keys (↑, ↓, ←, →, MENU/ESC, START/ENTER)
Audible Alarm		Buzzer on above alarm threshold
Software ^{*4}	Functions	Measurement data collection and Parameter Editing
	OS	Windows Vista / 7 / 8 ^{*2}
Accessories		AC Adapter, User's Manual (English)
Consumables		Collection Plate ^{*3} , Optional Battery

^{*1}: Depends on parameter setting and charge/discharge cycles of the battery.

^{*2}: Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

^{*3}: Replacement of Collection Plate is required every 5,000 measurements under the Recommended Cleanliness Class use.

^{*4}: Contact your dealer to get the software.